

From: "Zhen, Davis"  
To: "Young, Howard S." <younghs@cdmsmith.com>  
"Sheldrake, Sean" <sheldrake.sean@epa.gov>  
CC: "Scott Coffey" <coffeyse@cdmsmith.com>  
"Vickstrom, Kyle E." <vickstromke@cdmsmith.com>  
Date: 8/6/2018 7:35:14 AM  
Subject: RE: Multiple Core Attempts

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Thank you Howard. This may require some additional conversation with Ken. But he will be sending in a change request for the FSP last I checked.

Thanks,

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From: Young, Howard S. [mailto:younghs@cdmsmith.com]  
Sent: Friday, August 3, 2018 2:43 PM  
To: Zhen, Davis <Zhen.Davis@epa.gov>; Sheldrake, Sean <sheldrake.sean@epa.gov>  
Cc: Scott Coffey <coffeyse@cdmsmith.com>; Vickstrom, Kyle E. <vickstromke@cdmsmith.com>  
Subject: FW: Multiple Core Attempts

Davis,

In response to Ken's email below, which we presume is in lieu of a change request form, it may be problematic to change the FSP core acceptance criteria to less than 3 attempts and here is why.

From the information presented in this email it is not clear if changing the FSP core acceptance criteria for target penetration depth is appropriate. For example, in the Pre-RD Group's International Slip example below, there are core penetrations listed of 11.6 and 13.4 feet (for a 15-foot target), yet the text claims that the deepest achievable penetration in the International Slip was 7 to 10 feet.

Another example is the incident that occurred on 8/2/2018 where the Pre-RD Group's field judgement/informed decision process appeared inadequate as indicated by our oversight inspectors following email:

"Included are photos of site SC-S178 / RM 8.1 W (target depth 15ft). Historically, samples collected here are between 10-12ft (penetration depth). The first attempt yielded 9.8 ft of sediment, 11.2 ft of penetration depth, with 84% recovery. The Pre-RD group considered using this core as their one and only sample attempt at the site, considering the core's length recovered was similar to the historical cores and they believed they would not achieve more length recovered with more attempts. According to the FSP section 4.3.1& 4.3.2, if target penetration depth is not achieved, a total of three attempts would be made. The Pre-RD group was informed of the FSP requirements in section 4.3 by oversight personnel. They responded by proceeding to drill two subsequent cores at the site (eventually achieving a target depth of 15 ft)."

These two examples indicate that the approved FSP contingency plan is effective at getting better penetration depths.

We recommend that the Pre-RD provide technical justification for reducing the number of contingency attempts in situations where the target depths are not achieved. This should include comparison of 2018 bathymetry data with the RI bathymetry data or presenting other technical rationale for changing the target penetration depths in FSP Table 1.

Howard S. Young, LG | CDM Smith

From: Tyrrell, Ken <[ken.tyrrell@aecom.com](mailto:ken.tyrrell@aecom.com)>

Sent: Friday, August 03, 2018 11:50 AM

To: Zhen, Davis <[Zhen.Davis@epa.gov](mailto:Zhen.Davis@epa.gov)>

Cc: Coffey, Scott <[CoffeySE@cdmsmith.com](mailto:CoffeySE@cdmsmith.com)>; Young, Howard S. <[younghs@cdmsmith.com](mailto:younghs@cdmsmith.com)>; Vickstrom, Kyle E. <[vickstromke@cdmsmith.com](mailto:vickstromke@cdmsmith.com)>

Subject: Multiple Core Attempts

Davis,

As you noted in your email earlier this week, we have a question that came up on the coring vessel with the field teams regarding core recoveries and "best of three attempts". We'd like to resolve this with you quickly. The field teams know that if 80% core recovery is not reached then drive up to 2 more attempts and keep the best of three. A recent scenario was 95% recovery at the first drive attempt at location S031 (in the slip, see red circle) but only about 8 ft penetration depth to refusal. The target drive depth per the FSP is 15 ft; however, it is a goal dependent on actual field conditions.

A refusal depth of 8 to 10 ft is pretty consistent with other nearby deep core locations in the slip from last week (see purple circles). In this case, we made an informed decision about site conditions observed in the field and accept the first at core location S031. Three attempts are not necessary when the refusal depths are consistent in the area. The FSP states that up to 3 attempts may be advanced if target criteria are not met. We request that EPA confirm that less than 3 attempts are necessary if we can make informed decisions about site conditions. We also request the term "refusal" be removed from criteria "e" in the FSP and that the target depth range (e.g., +/- 5 ft) be understood by the field team as acceptable if refusal is encountered shallower than the target depth. We can document these conditions in an Anomaly Notification to EPA, if desired.

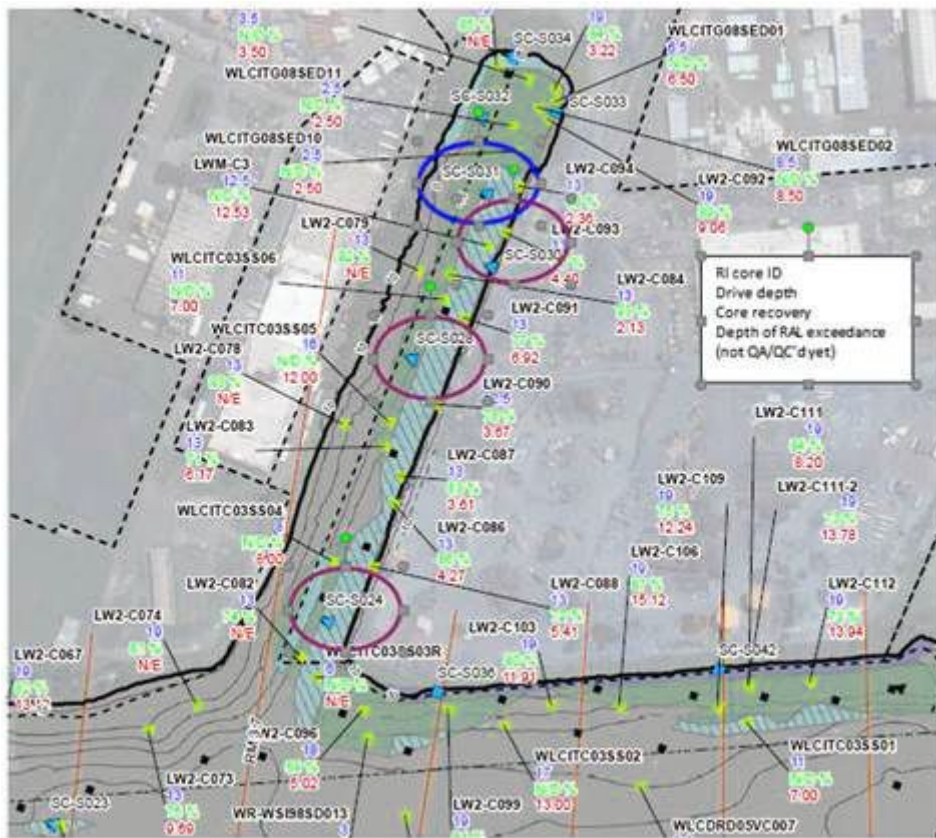
Details:

In some cases the target depth is not reached due to subsurface conditions. While the target depth is described in the FSP, this depth is only a goal (or target), pending actual field experience; the field crews have been encountering difficult driving and refusal. The vibracoring system is set up with a tape measure to assist in tracking penetration depths. While monitoring penetration, the contractor will note to the field team when refusal (lack of penetration) is being encountered, then the system will continue to run for several more minutes in an attempt to vibrate the core tube through the existing conditions. If no change, the system is turned off and the core is retrieved on the boat for measurement and refusal is noted. Substrate conditions at depth have been described as dense, compacted sand and dense, clay or rocks/gravel. This hard substrate condition is indicative of Native Sediment Conditions.

Also, we are reanalyzing the target depths in FSP table 1 relative to the new 2018 bathymetry, especially if dredging has occurred in the intervening years. Some target depths may change.

Clarification from Anne:

These were recommendations that Anne made to field team on Weds (rationale - why keep driving the cores to refusal and getting the same result), but she also told the field team that if EPA expressed any concerns, then collect up to 3 cores and we can work it out later.



In the International Slip, for example, we have noted pretty consistent drive depths after 3 attempts at multiple core locations suggesting that subsurface conditions are such that a deeper depth is unobtainable. Our attempts at each location suggest that the deepest the system could penetrate was between 7-10 ft even though the FSP proposed 15-20 ft core depths.

Location ID	Core Type	Date Cored	Location	# of Attempts	Penetration Depth (ft)	Recovery (%)
SC-S030	Deep	7/25/2018	Schnitzer Slip (target drive 15 ft, but consistently only driving <10 ft then hit refusal)	1	1.5	46%
				2	7.4	78%
				3	6.8	97%
				4	7.0	86%
SC-S024	Deep	7/26/2018	Schnitzer Slip (refusal)	1	8.4	48%
				2	13.4	46%
				3	9.8	66%
SC-S028	Deep	7/26/2018	Schnitzer Slip (refusal)	1	11.6	59%
				2	7.4	77%
				3	8.2	33%

Final FSP Excerpt Below (dated 7/30/18)

#### 4.3.1 Core Acceptance Criteria

Each subsurface sediment core retrieved on deck will be compared to these acceptance criteria:

- a. Overlying water is present and the surface is intact.
- b. Core has 80% target recovery versus penetration (or document why recovery is less after three attempts).
- c. Core tube is in good condition (not excessively bent).
- d. Core appears representative of surrounding area.
- e. Target penetration depth has been achieved or bedrock is encountered. If target depth is not reached due to cobbles, debris, refusal, or other difficult drilling conditions, an additional core will be attempted as described in the contingency plan (see Section 4.3.1). If NAPL is observed at depth in a core, then EPA will be notified.

#### 4.3.2 Contingency Plan for Field Condition Impediments for Collecting Cores

During the subsurface sediment coring efforts, the field crew may encounter field conditions that preclude collection of acceptable cores at the planned location (e.g., limited access, poor recovery, safety concerns, debris/rock/bedrock causing refusal). No more than three attempts will be made to relocate the core within a 50 ft radius of the planned location if accessible.<sup>3</sup> If not accessible (i.e., under a dock/pier/vessel, shallow water depth), then the target radius will be increased for sample collection (e.g., 125 ft). If the first core attempt meets the acceptance criteria, then no additional cores will be collected at that station. If not, then up to two additional cores will be attempted and retained (stored on vessel deck). The best (percent recovery) of three attempts will be retained and processed.

#### **Ken Tyrrell**

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